# Overcoming Energy Injustice? Bulgaria's Renewable Energy Transition in Times of Crisis

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## 1. Introduction

Renewable energy transitions are considered expensive due to their high initial capital costs and hence require regulatory support, for example through preferential pricing mechanisms (Owen, 2006; Nelson *et al.*, 2014). However, subsequently increasing electricity prices, paired with a displacement of fossil fuel industries, have potentially negative effects on economic growth (Frondel *et al.*, 2010; Marques and Fuinhas, 2012). As such, in the wake of the European economic and debt crisis, Slominski (2016) suggests that economic issues have been prioritised over climate change, as concerns over the cost implications of climate measures heightened. Nevertheless, in 2013 Bulgaria became the first EU member-state to reach and exceed its renewable targets under the Europe 2020 Strategy after having essentially no renewable energy installed prior to its accession in 2007 (with the exception of large-scale hydropower). This article therefore seeks to determine how Bulgaria, as the poorest EU member-state, managed to meet its 2020 renewable targets in times of economic crisis and austerity, and the consequences for its economy and energy system.

Generally, contemporary literature has identified several influential factors shaping renewable energy transitions, such as the need for a strong long-term political support (Fabra *et al.*, 2015), an effective and dynamic policy design (Nicholls *et al.*, 2014; Haas, Panzer, *et al.*, 2011; Haas, Resch, *et al.*, 2011), as well as a supportive macroeconomic wealth context, such as high levels of income (Eyraud *et al.*, 2011). At the same time, expanding renewables is associated with wider environmental, economic and societal benefits. These include lower energy costs in the medium to long-run (Fabra *et al.*, 2015), as well as an improved availability and sustainability of the energy system in terms of reduced emissions, distributed power generators, and an infinite resource availability (International Energy Agency, 2009; World Nuclear Association, 2011; Omer, 2008; Chodkowska-Miszczuk, 2014). However, the majority of literature on renewable energy transitions has focussed on wealthy countries, such as Denmark, Germany, and the UK (Foxon *et al.*, 2008; Cherrington *et al.*, 2013; Toke, 2011; Lund, 2007; Jacobsson and Lauber, 2006; Lehr *et al.*, 2012;

Stefes, 2010). It is therefore important to address how well these assumptions and potential benefits stand up in a less-wealthy country.

Furthermore, the benefits of renewable energy transitions resonate with several aspects of energy justice. These aim to ensure access to clean and affordable energy, and to overcome the unequal distribution of environmental ills associated with the production and use of energy through an inclusive and transparent process in the development and implementation of energy projects and policies (Jenkins *et al.*, 2017). Based on Jenkins *et al.* (2016) energy justice provides a comprehensive analytical framework for researching energy systems, and can be applied as a "conceptual tool for ethicists, an analytical tool for energy researchers, and a decision-making tool for policy-makers" (Sovacool and Dworkin, 2015; Islar *et al.*, 2017, p.671). While selected works have addressed burdens and benefits of renewable energy transitions (Sovacool and Dworkin, 2014; Sovacool, 2017), to the best of our knowledge, there has so far not been an inclusive analysis of them in terms of energy justice. This gap on comprehensively establishing potential synergies between the objectives of energy justice and the impacts of renewable energy transitions is evident in both the renewable energy and energy justice literatures, although renewables do take a prominent role in energy justice debates (Fuller and McCauley, 2016; Jenkins *et al.*, 2017, 2016; Sovacool and Dworkin, 2015). This paper therefore hopes to help close this gap by addressing the societal and economic impacts of Bulgaria's renewable energy transition in terms of energy justice, and thereby provide a potential pathway for future analyses. It further contributes to our contemporary understanding of the drivers and factors shaping renewable energy transitions in a less-wealthy country by analysing the largely under-researched case of Bulgaria.

The paper begins with an outline of our conceptual and methodological approach. The analysis first addresses how Bulgaria achieved its 2020 targets. In this section, we conduct a brief policy analysis of the regulatory framework that drove the transition, and draw from a set of semi-structured interviews to identify the key influential factors that established the favourable policy environment. We then analyse the consequences of Bulgaria's fast expansion of renewables. In the

last part of the analysis, we assess the case of Bulgaria's renewable energy transition through the lens of energy justice. To do so we expand on the existing energy justice framework. We then discuss our findings and offer some conclusions.

## 2. Conceptual and Methodological Approach

Our analysis employs a mixed-method approach, including a set of semi-structured expert interviews, as well as analyses of major policies and reports, and is supported by secondary sources, such as peer-reviewed articles. Between February and April 2017, we conducted eight interviews in Bulgaria via Skype with members of non-governmental organisations, academia, and the media, as well as politicians and civil servants to establish the factors influencing Bulgaria's renewable energy transition and to gain insights into its consequences. Interview contributions are coded according to their affiliation.[1] The paper is guided by these semi-structured interviews and supported by the qualitative analysis.

Adding to the findings of the initial investigation we assess Bulgaria's renewables expansion in light of energy justice. Rooted in environmental justice, this approach questions the justice, equity and fairness of contemporary energy systems. As a framework it follows the three tenets of distributional justice (benefits and burdens of energy systems), procedural justice (fair, transparent, non-discriminatory and inclusive decision-making processes), and justice as recognition (uphold human dignity) (McCauley et al., 2013; Islar et al., 2017; Jenkins et al., 2016). Energy justice thereby incorporates issues of economics, scarcity and pollution by focusing on decision-making processes of energy, and its production, generation, and consumption, as well as consequent societal implications though a lens of intra- and intergenerational justice (Sovacool and Dworkin, 2015; Islar *et al.*, 2017).

Based on the three justice tenet framework, Sovacool and Dworkin (2015) establish eight principles of energy justice: availability (access to energy), affordability (cost of energy), due process

[1] Academia (ACAD), Bulgarian Energy and Mining Forum (BEMF), Center for the Study of Democracy (CSD), Government (GOV), Green Party (GREEN), Media Outlet (NEW), and the WWF (WWF).

(stakeholder participation, rule of law), good governance (fair and transparent decision-making processes; effective, efficient and responsive legislation), sustainability (sustainable use of resources), intragenerational equity (equal access to basic energy services), intergenerational equity (right of future generations to live undisturbed of the damage inflicted by today's energy systems), and responsibility (all nations are responsible to minimise energy-related environmental threats). While these principles allow for a more specialised analysis of energy justice factors, they are highly interrelated and mutually reinforcing. We therefore analyse them in a grouped format with respect to (i) due process and good governance, (ii) availability, sustainability and affordability, (iii) and intra- and intergenerational justice, and responsibility. Furthermore, justice is an inherently contested concept and therefore, rather than considering justice as an absolute, we seek to identify justice trends in Bulgaria's energy system. In the following we outline the groups of analysis and how we measure achieving, or failing to achieve, greater energy justice in each principle.

We firstly analyse the principles of 'due process' and 'good governance', addressing primarily the procedural justice and justice as recognition tenets. We identify 'due process' through (i) the inclusion of relevant stakeholders in the decision-making processes and effective consultations with affected communities, and (ii) the provision of environmental and social impact assessments. 'Good governance' is identified according to a low level of corruption, transparent government actions, and the provision of effective, efficient and responsive legislation. We therefore assess (i) if the Bulgarian government made information on policies and agreements publicly available, and (ii) if implemented policies achieved their intentions, and were responsive to unforeseen contextual changes.

Secondly, we focus on the distributive justice tenet by determining the availability, affordability and sustainability principles. As 'availability' is improved if a country can guarantee the undisrupted provision of high-quality energy services to its population, we determine improvements

in terms of overall energy dependence levels,[2] stability of the grid (represented through distribution losses), and quality of energy supply. 'Affordability' is concerned with energy costs borne by consumers and improved – and thereby measured – according to price stability (minimal volatility) and actual costs that are not to exceed 10% of income, which is the commonly used threshold of energy poverty (Islar *et al.*, 2017). We measure improved 'sustainability' from a climate and energy perspective. We therefore assess whether emission levels have been reduced and renewable energy sources increased. Renewables are the most sustainable energy sources since they do not require the exploitation of finite resource stocks.

Finally, we address intra and inter-generational equity and responsibility. As each principle is dependent on the achievements in already analysed justice principles, this group acts somewhat as an overall summary of energy justice in terms of contemporary justice, future justice, and the role of government. 'Intragenerational equity' represents a combination of above factors of access to energy to all (availability) without discrimination (due process/good governance), at a price that neither overburdens poorer sections of society (affordability), nor results in the pollution of environmental goods, such as air (sustainability). 'Intergenerational equity', in turn, is concerned with the effects of contemporary actions for future generations, and thereby depends on the current meeting of energy justice principles that affect the future, particularly the sustainability principle. Also relating particularly to current sustainability actions is the principle of 'responsibility' that considers nations to be responsible to protect the natural environment, limit social and environmental costs associated with the production and use of energy. It therefore considers the ability and willingness of the government to improve the sustainability of its energy system.

[2] In terms of energy security, and as stressed by the European Commission's (2014a) European Energy Security Strategy, dependence of imports for energy is considered a risk.

## 3. Background: Enabling Bulgaria's Renewable Energy Transitions in Times of Crisis

The global financial and economic crisis paired with the European Debt Crisis had extensive implications for the Bulgarian economy that suffered from a decreasing purchasing power of the population in light of rising unemployment levels, which led to falling government revenues (Petkov, 2014; Milio *et al.*, 2014). With a traditional focus on maintaining a balanced budget, Bulgaria quickly introduced austerity measures to counteract a growing government deficit primarily by slashing expenditures, for example, in public services and environmental protection (Petkov, 2014). By 2012, deficit levels had returned to a healthy 0.8% with austerity considered a success in terms of reaching the convergence criteria[3] (Eurostat, 2017).

For the renewable energy market, the economic crisis initially had a positive effect. Based on Bulgaria's first renewables law of 2007[4], and its 2008 amendment[5], the country had established generous feed-in tariffs (FITs) for renewables at almost 140EUR/MWh for wind under 15 year contracts, and between 718 and 782EUR/MWh for solar photovoltaics (PV) under 25 year contracts, depending on size (EREC, 2009). As the economic crisis led to reduced investment opportunities and renewable support in some European markets, Bulgaria's highly attractive renewable support drew a large number of developers, resulting in a fast growing interest in renewable investments in Bulgaria (Winkel *et al.*, 2011).[6] In 2008, the National Electric Company (NEC) received requests for almost 7.7GW of wind power alone (Center for the Study of Democracy, 2010). The 2009 Renewable Energy Directive – the basis for the 2010 Europe 2020 Strategy and its renewable targets (European Commission, 2010) – induced further beneficial policy adjustments that, for example, guaranteed connection to the grid and priority dispatch for renewables, and provided for shared costs in the construction and connection of renewables, with the largest share being taken over by the

[33] In 2016, government deficit in % of GDP stood at 0 (Eurostat Press Office, 2014).
[4] The State Gazette, No. 49 of 19 June 2007
[5] The State Gazette, No. 98 of 14 November 2008
[6] BG-WWF-001; BG-NEW-01

distribution company (Republic of Bulgaria, 2011). The FiT price was recalculated to amount to 80% of the average selling price of electricity in the reference year, plus a surcharge equivalent to, or higher than, the surcharge of the previous year (Gramatikova, 2012; RES Legal, 2017; Republic of Bulgaria, 2011).

By 2011, about 10GW worth of renewable projects applied for connection; exceeding the capacity of the energy system by approximately 100% (Gramatikova, 2012). Additionally, falling price levels for PV solar and the inability of preferential price levels to be adequately adjusted led to a surge in projects in 2012 that saw solar capacity increase almost seven-fold compared to 2011. While the National Renewable Energy Action Plan envisaged solar PV capacity to reach 300-320MW by 2020 (Republic of Bulgaria, 2011, p.159), actual solar capacity grew from 150MW in 2011 to over 1GW in 2012 (Nikolaev and Konidari, 2017). Unforeseen by the government, these growth levels meant that by late 2012, Bulgaria had already met and exceeded its 2020 target for final energy of 16%, reaching over 17% in 2013 (EurObserv'Er, 2015).

While the economic crisis effectively re-directed freed capital from other renewable energy markets to Bulgaria, it was the particular characteristics of the regulatory environment in Bulgaria that enabled the rapid expansion of renewables. In this sense, corruption and bad governance have been associated with the promotion of renewable energy in Bulgaria from its inception. Generally, the Global Competitiveness Index identified inefficient government bureaucracy and corruption as the country's most problematic factors for years (World Economic Forum, 2007, 2016). As such, state capture, cronyism, dysfunctional state institutions and corrupt judiciaries remain a fundamental concern in Bulgaria (OECD, 2013). Indeed, at the time of accession, rather than fulfilling the requirements of the *acquis communautaire*, corruption was seen to increase (Vachudova and Spendzharova, 2012), resulting in the initiation of the Cooperation and Verification Mechanism (CVM) by the European Commission (European Commission, 2017).[7] In 2008 the EU froze a

[7] The CVM seeks "to address shortcomings in the judicial reform, and the fight against corruption and organised crime" (European Commission, 2017, p.2).

significant amount of funds[8] for Bulgaria after corruption in the disbursement of regional development moneys by Bulgaria's state administration came to light (Vachudova, 2009). As such, the renewable policy in 2008 is said to have had little to do with sustainable energy policy or climate change, but with ways to find new finance opportunities from the EU.[9] Indeed, as a new member to the EU, Bulgaria saw significant funding opportunities through the promotion of renewable energy (Hiteva and Maltby, 2017).

Being pushed for by developers and investors, the resulting lucrative opportunities were presented by the government as the result of merely following their obligations under the EU framework.[10] In fact, the promotion of renewable energy in Bulgaria followed a top-down Europeanisation process also prior to the 2020 Strategy (Hiteva and Maltby, 2017). However, the public saw renewable policy to be primarily driven "by private interest and made in such a way as to generate maximum profit at the expense of the state-owned companies".[11] For example, while the 2011 Energy from Renewable Sources Act (ERSA) lowered Feed-in Tarrif (FiT) rates and the length of purchase contracts for renewable projects, any project connected to the market prior to 2008 was explicitly exempt from these changes (Government of Bulgaria, 2011a). These few projects were implemented by "offshore companies that are in one way or another related to the Bulgarian Mafia [and that] are still getting the higher price of tariffs [read, the unreduced price]".[12]

The initially generous renewable incentives are therefore commonly associated with a mutually beneficial relationship between developers, investors and politicians with several MPs also being accused of making legislation in favour of their own business interests, having invested themselves in renewable projects.[13] As such, the strong influence of certain interest groups directly

[8] The EC "cut off Bulgaria's funding for road construction after the arrest for bribery of two Bulgarian road agency officials. Some €115 million in money destined for roads were frozen, followed by €121 million in money earmarked for agricultural and rural development." (Vachudova, 2009, p.54)
[9] BG-CSD-01
[10] BG-NEW-01; BG-GOV-01
[11] BG-CSD-01
[12] BG-WWF-01
[13] BG-GREEN-01

led to the rapid expansion in renewable capacity, as "renewable energy producers and their investors were pressing for good conditions".[14]

## 3.1 The Implications of Bulgaria's Renewable Expansion

Fuelled by the generous FiT scheme, renewable capacity grew at a rate that challenged both the grid operator and electric companies. The transmission system operator (TSO) struggled severely in the early years of the rapid capacity growth to accommodate the connection of all new renewable projects. As the TSO was legally obligated to provide grid connection and priority access to renewables, Bulgaria was criticised by the EU over its failure to provide appropriate mechanisms regulating the connection of renewables to the grid (Kirov, 2012). Indeed, the regulatory framework did not provide incentives for the development of the grid, which resulted in a shortage of transmission capacity. Furthermore, about 50% of wind power is located in the north-east region of the country, far from major population/consumption centres of Sofia and Plovdiv in the west and south-west (Jirous *et al.*, 2011). In order not to be subjected to fines by infringing on its connection obligation, officially, the TSO argued that the effective curtailing of wind energy plants in this region to 50% of capacity was to the benefit of the grid system as only few renewable sources could serve as balancing capacities (Jirous *et al.*, 2011).

In light of the vast amount of renewables projects that sought development, distribution companies began rejecting connection applications in 2010, and awaited the announced policy amendments by the Bulgarian government for 2011 (Winkel *et al.*, 2011; Gramatikova, 2012). From May 2011, Bulgaria's *Energy From Renewable Energy Sources Act* (ERSA) abolished priority access for renewables to ease the pressure on the grid and introduced obligatory advance payments of renewable developers to counteract speculative projects (Government of Bulgaria, 2011a). The Act further adjusted the renewable growth trajectory to 1% per year, which in effect would render Bulgaria unable to reach the 2020 targets of 16%, and reduced the duration of purchase contracts

[14] BG-ACAD-01

retroactively, while restricting medium and large scale investment projects (Government of Bulgaria, 2011a). The Act reorganised the administrative unit promoting renewable energy production by converting the Energy Efficiency Agency into the Agency for Sustainable Energy Development. Although the rules of regulation for the agency were finally agreed upon by October 2011, the Agency only effectively began work in 2012 (Winkel *et al.*, 2011).

Additional policy changes affected the price determination of FITs for wind projects as well as amendments to the Energy Act concerning the liberalisation of the energy sector. However, tariffs continued to be calculated and set for the whole period starting on the first of April each year to the thirty-first of March the next year in advance with little to no flexibility to respond to developments on the energy market and falling technology costs[15] (Gramatikova, 2012; Bulgaria State Gazette, 2013). As such, in 2011 FiT rates for solar PV projects were set just weeks before a significant drop in technology costs, with no changes to the rates possible afterwards.[16] The consequent boom in solar capacity development, and hence the reaching of its 2020 targets by the end of 2012, resulted in a moratorium on FiTs for new projects in 2013. In February 2015, the feed-in tariff scheme was officially ended for new renewable energy installations (EurObserv'Er, 2015). Hence, renewable capacity growth has decreased substantially, coming to an almost complete halt in 2015 (EurObserv'Er, 2015).[17]

Critically, the 'success' of the renewable energy transition thus far had come at an immense cost, considering electricity prices for lignite stood at about EUR13.5 per MWh in 2013, and preferential prices for solar and wind stood at EUR 118.3/MWh and EUR 66.35/MWh respectively (Center for the Study of Democracy, 2014, p.69). A threefold increase in CHP cogeneration electricity at prices between EUR 65/MWH and EUR 70/MWh further led to rising costs of the energy system (Center for the Study of Democracy, 2014). While Bulgaria has the lowest electricity and gas prices in

[15] BG-ACAD-01
[16] BG-NEW-01
[17] While year-on-year renewable capacity growth, including hydropower, stood at 6.8% in 2011 and 28% in 2012, in 2013 this had fallen to just above 1%, to 0.91% in 2014, and less than 0.35% in 2015 (Nikolaev and Konidari, 2017).

the EU, in terms of purchasing power standard Bulgaria's prices are substantially higher than the EU average (European Commission, 2013). With energy poverty considered a major threat in Bulgaria's 2011 energy strategy (Government of Bulgaria, 2011b), the government decided not to transfer the entire cost of renewables onto end-consumers. Nevertheless, rising electricity bills played a triggering role in the protests emerging in the winter of 2013 that forced Prime Minister Borisov to resign in February 2013 (Ivancheva, 2013; Velinova *et al.*, 2015; Smilov, 2015). This development ultimately plunged the country into political crisis as repeated protest waves led to three interim governments and three elected governments between 2012 and 2017 with Borisov returning to office in 2014 and again in 2017 (Deloy, 2017, 2014).

The economic crisis played a further negative role with regard to the financing of Bulgaria's energy system, as the country used to balance the low regulated electricity prices domestically through the revenues generated through the export of electricity. However, with a weakened demand from markets, such as Greece, Macedonia and Turkey during the crisis, and a strong increase in renewables in neighbouring countries such as Romania, export revenues were falling with the cost for energy increased (Hiteva and Maltby, 2017).[18] Although the generous FiT scheme and rising renewables shares played an important role in the overall increased costs of Bulgaria's energy system, additional financial burdens stemmed from long-term power purchase agreements with coal and nuclear plant operators, and "black hole investment projects", such as the recently failed Belene nuclear power plant project (Center for the Study of Democracy, 2014, p.71). As generation costs increased higher than utilities could lawfully charge their customers under the regulated pricing regime, Bulgaria ran a severe deficit that resulted in a debt of BGN 1.9 billion, or 2% of GDP, in 2015 (World Bank, 2016). To combat the significant tariff debt, the World Bank (2016) urged Bulgaria to abandon its single-buyer model in favour of a competitive power market that would also be in accordance with the EU's internal electricity market. The single-buyer, the NEC, is severely burdened by bearing the cost of the energy system and was at times unable to remunerate

[18] BG-CSD-01

energy generators due to cash flow problems.[19] However, following the recommendation to continue the process of full market liberalisation and coupling with the EU electricity market is feared to result in sharply rising electricity prices, as Bulgaria's low consumer electricity prices align with other European markets[20] (Eurostat, 2017; Center for the Study of Democracy, 2014).

As a result of the dire financial situation, government policies sought to decrease costs and increase revenues from the energy system, for example through the 2012 grid access fees to renewable energy generators, which was, however, later repealed by the Constitutional Court on discriminatory grounds (Grozdanov, 2016). In December 2013, an amendment to the ERSA introduced a 20% fee on solar and wind parks, adjusted FIT rates retroactively, and established a threshold for the amount of electricity purchased at an FIT rate by the State Regulatory Energy and Water Commission equivalent to about two-thirds of the generation capacity[21] (International Energy Agency, 2015b). This cap on renewables effectively excluded renewables from the free market for the last two months in 2015 (Grozdanov, 2016). The 20% renewables fee was again repealed by the constitutional court and since 2015 replaced by a 5% production fee and balancing charges on the revenues of all electricity generators (International Energy Agency, 2015a).

## 4. Bulgaria's Renewable Energy Transition in Light of Energy Justice

In light of the outlined successes, challenges and implications of Bulgaria's renewable energy expansion, this section assesses the country's renewable energy transition through the lens of energy justice. This section analyses the eight aspects of energy justice in a grouped format. As the expansion of renewables plays an important role with regard to the aims of energy justice, we seek to determine the concrete effects of Bulgaria's renewable energy transition on the justice, equity

[19] In 2014, the NEC owed some USD500 million to generating companies (Ewing and Kantchev, 2014)
[20] As aforementioned, Bulgarian electricity prices are the lowest in the EU, and therefore are expected to increase if liberalised and integrated.
[21] BG-CSD-01

and fairness of the country's energy system. Other important factors include the effectiveness and efficiency of the regulatory framework, as well as oversight and participatory concerns.

i. Due Process and Good Governance

Bulgaria's renewable policy has been marred by a lack of a long-term strategy, corruption and administrative incompetence that resulted in frequent policy changes and therefore a significant lack of regulatory stability (Hiteva and Maltby, 2017). In this sub-section we address (i) the public availability of information on projects and government contracts, (ii) the inclusion of stakeholders in the decision-making process through effective consultations with the public, (iii) the provision of environmental and social impact assessments, (iv) and the effectiveness, efficiency and responsiveness of policies.

(i) Although Bulgaria has taken measures to combat corruption, reports on the implementation of Decree 114 on the monitoring and control over the financial conditions of state-owned enterprises showed significant deficiencies for example in providing the required additional performance analysis, lacking consistency in their reports, showing discrepancies between annual reports of the government and companies, and including factual mistakes (Center for the Study of Democracy, 2014). Under its legal requirements driven by EU regulation, the government provides several platforms of information for public access. The Sustainable Energy Development Agency maintains a database of renewable and heating projects.[22] The Agency also provides a contact point to report corruption. Furthermore, Bulgaria's Electric System Operator provides hourly data on the generation of electricity based on source, including data on electricity imported as part of the liberalisation process of Bulgaria's Electricity Market.[23]

Crucially, through the financial support of the EU's PHARE Programme and the Operational Programme Administrative Capacity that is co-funded through the European Social Fund, Bulgaria's

[22] Accessible only in Bulgarian at: http://www.seea.government.bg/bg/
[23] Available at: http://www.eso.bg/?did=124#Начална страница

Public Procurement Agency (PPA) – itself established as part of the EU accession process in 2004[24] – created a registry of public procurement contracts on its online portal in 2009.[25] Energy enterprises took up a significant share of government contracts in 2010-2012 public procurement processes of about 20% (Center for the Study of Democracy, 2014). While information on general renewable support is transparent due to EU reporting requirements and publicly regulated FiT levels, data on government contracts with conventional power generators remain difficult to access. The registry of the PPA is counterintuitive to operate, registration necessary to access the advanced search engine, and pieces of information spread out across different access points. As such, there remains no easy access to details, and "the current opaque system of governance of state-owned enterprises is prone to abuses of public funds and serious neglect of the companies' interest" (Center for the Study of Democracy, 2014, p.94).

(ii) Based on the opaque information system, there is also a lack of data on government consultations with stakeholders and the public. According to the Center for the Study of Democracy (2010, 2017, 2014), the government does not provide meaningful consultations on energy projects, despite the importance of an inclusive approach to ensure "that social needs are also taken into consideration in the decision-making process" (Center for the Study of Democracy, 2014, p.76). Based on our interviews[26], government miscommunication was indeed a crucial issue in the winter 2013 protest that eventually led to the downfall of the Borisov government following an increase in regulated electricity prices to cover a greater share of the costs of rising renewable generation levels (Velinova *et al.*, 2015). As the former minister of energy in the 2013 interim government, Julian Popov, told us:

> "People were very surprised by the electricity prices because they received bills for forty-five days rather than thirty days, which coincided with the increase of electricity prices by 13%, which was not a lot, considering in the period of two or three years, prices were not

[24] The Public Procurement Agency is governed by Decree No 56 of the Council of Ministers (prom. SG No 24/23.03.2004).
[25] Available at: http://rop3-app1.aop.bg:7778/portal/page?_pageid=173,1&_dad=portal&_schema=PORTAL
[26] BG-GOV-01; BG-CSD-01

> increased at all. So the increase was modest but very badly communicated because psychologically when people saw the bill, they saw that it doubled."[27]

The lack of effective communication between government and stakeholders can also be seen in the early-2012 protests against Chevron's plan to begin shale-gas exploration in Bulgaria that highlighted "that corporations and government did not consult the people and did not make the slightest attempt to create shared value"(Popov, 2013). The subsequent ban of fracking "was […] a punishment for inappropriate public behaviour by the people in power. And this is exactly what the political parties and powerful corporations failed to see" (Popov, 2013).

(iii) The government is obligated under EU Directives 2003/35/EC (European Commission, 2003) and 2009/31/EC (European Commission, 2009), as well as by Bulgaria's Environmental Protection Act to provide environmental impact assessments (EIAs) on defined projects and developments, as seen for example in the case of the South Stream Gas pipeline (Institute of Energy for South-East Europe, 2014). Based on Annex 1 of the Environmental Protection Act (Government of Bulgaria, 2014) that outlines projects in need of EIAs, renewable projects, such as large-scale wind farms or hydropower plants are not mentioned, while crude oil refineries, thermal power stations, and nuclear power stations are. However, for example, large-scale wind installations can have significant adverse environmental effects (Powlesland, 2009; Zimmerling *et al.*, 2013). Indeed, the Court of Justice of the European Union, ruled in 2016 that the Republic of Bulgaria failed to fulfil *inter alia* its obligations under Article 4(4) of the Birds Directive allowing the implementation of several wind farm projects in the Kaliakra region despite its importance for migratory species (Court of Justice of the European Union, 2016).

(iv) Although the initial design of the country's support scheme was generally effective in generating a fast expansion of renewables capacity, due to its extremely generous tariff scheme far above market prices[28] the system was neither efficient nor responsive as it "did not provide adequate FIT buffers and did not account for market, social and economic risks" (Center for the

[27] BG-GOV-01
[28] BG-CSD-01

Study of Democracy, 2014, p.71). Crucially, the lack of a clear long-term strategy provides opportunities for interest groups to lobby decision-makers and exert corruptive pressure (Mantcheva *et al.*, 2012, p.7). In fact, the 2020 targets were set to be achieved steadily over a period of time to incentivise technological and therefore cost advancements in renewable energy sources. A more gradual growth trajectory of renewables would have allowed for costs to be distributed over a longer time, including grid expansion costs. Instead, in the case of Bulgaria, the costs were carried by the state-owned companies in the first place and now will be transferred to the taxpayers to pay the companies' debt.[29] As such, due to the corrupted and mismanaged policy framework for renewables, households currently pay a significantly higher than necessary share of the costs of the renewables transition. These additional costs burden economically weaker households significantly more as energy poverty is already a major issue in the country.

Furthermore, the system regulating the preferential prices repeatedly proved inadequate to foresee and respond to market dynamics. The problematic regulatory framework was complemented with a general incapacity and incompetence of administrative bodies. For example, the 2011 ERSA delegated the development of procedures to implement renewables projects to local governments, rather than providing a national framework to simplify processes (Winkel *et al.*, 2011). Municipal administrations, however, lacked the expertise and staff to address these tasks adequately (Mantcheva *et al.*, 2012). As a result, the application of a private person for a rooftop solar installation requires a very similar amount of paperwork as for a developer to apply for the construction a nuclear power station as they are governed by the same legislation.[30]

ii. Availability, Sustainability and Affordability

Bulgaria's renewable energy transition provides a mixed picture in terms of distributive justice. In this sub-section, we determine the energy justice principles in light of (i) overall energy dependence

[29] BG-CSD-01
[30] BG-WWF-01; BG-GREEN-01

levels, (ii) stability of electricity supply, (iii) sustainability improvements in terms of emissions and energy intensity, and (iv) actual electricity costs and price stability.

(i) Through the expansion of renewable energy capacities, Bulgaria's energy market benefitted from an increasing diversification of its electricity mix. While the country's largest renewable energy source, hydropower, increased marginally from a capacity of over 2.8GW in 2006 to 3.2GW in 2014, solar, wind and to a minor degree biomass capacity grew significantly. Wind power capacity rose from 27MW in 2006 to 690MW in 2014, while solar photovoltaics power only emerged in 2009 with a mere 2MW installed capacity, yet increased to over 1.03GW by 2014 (D'Ortigue *et al.*, 2015). Biomass plays only a minor role in the overall mix, increasing from 6MW in 2006 to 52MW in 2014 (D'Ortigue *et al.*, 2015). As such, wind and solar power have pushed the overall renewables share in total electricity generation from 9.37% of in 2006 to over 19.1% in 2015 (Eurostat, 2017).

Since renewables are a domestic source of energy, their expansion has positive effects on Bulgaria's import dependence. While in 2008, about 52% of energy was imported, this rate dropped to just above 35% in 2015, the fifth lowest score across the EU-28 (Eurostat, 2017). It is important to note that the EU's energy dependence level considers nuclear energy production as indigenous, ignoring the import of nuclear fuels (Government of Bulgaria, 2008). As the import dependence of feedstock for nuclear power generation – the second largest source for total electricity generation – is 100%, in the past the Government of Bulgaria considered the actual import dependence about 25% higher than the rate provided by Eurostat (Government of Bulgaria, 2011b). As all nuclear (and natural gas) imports originate from Russia, the EU Commission stressed that the lack of more diversified import sources remain a concern (European Commission, 2013).

Furthermore, Bulgaria has so far missed the opportunity to address issues related to the large portion of particularly rural households that continue to heat with wood and uses oil generators as backup electricity sources (Center for the Study of Democracy, 2014). Although solar PV installations could help overcome associated price and pollution (and therefore health) issues,

growth in residential installations is sluggish – despite continuing government programmes – primarily due to the bureaucratic procedures necessary to develop solar PV installations. An analyst from the Bulgarian Center for the Study of Democracy also noted that a general scepticism in the population towards government programmes in light of the sense of corruption is preventing a greater interest in residential solar.[31]

(ii) Bulgaria's renewable energy transition further provided upgrades to the electricity grid as important expansions to the transmission network and additional substations were realised in 2012 (Jirous *et al.*, 2011).The split of the public electricity provider, the National Electric Company (NEC), from the system operator as part of the unbundling process was also completed in early 2014 (Energy and Water Regulatory Commission Bulgaria, 2015). Overall, owed to the EU's financial support through the European Bank for Reconstruction and Development in developing the country's infrastructure, power transmission and distribution losses in percent of output have been falling steadily since 2002 from almost 15% to about 8.5% in 2014 (World Bank, 2017a). Nevertheless, the average distribution loss of almost 400 tonnes of oil equivalent, represents the second highest in Central and Eastern European Countries (Center for the Study of Democracy, 2014).

(iii) The growth in renewable electricity generation has lowered the environmental footprint of the country's energy system in terms of emissions. $CO_2$ emissions in kilo tonnes (kt) have decreased from 52.3 thousand kt in 2007 to just above 39.5 thousand kt in 2013. While $CO_2$ emissions from solid fuels, ie. coal, as a share of total emissions have effectively remained unchanged at 58%, actual emissions from solid fuels in kt fell from 30.4 thousand kt in 2007 to 23.2 in 2013 (World Bank, 2017b). As a result, total greenhouse gas (GHG) emissions decreased by over 37% in 2012 from 1990 levels (World Bank, 2017b). These developments are reflected in Bulgaria's environmental sustainability score of the World Energy Council that increased steadily over the past years (World Energy Council, 2015). Although energy intensity levels decreased by 39% between

[31] BG-CSD-01

2006 and 2010 (European Commission, 2013), Bulgaria continues to have one of the worst index scores across the EU (Center for the Study of Democracy, 2014). Energy expenditure volatility and intensity stand at 3180% and 855% above average OECD risk levels, and $CO_2$ per GDP and energy intensity 370% and 289% above average OECD risk levels respectively (Center for the Study of Democracy, 2014).

(iv) Although yearly household incomes have increased steadily since Bulgaria's accession to the EU in 2007, parallel rising electricity prices resulted in an increase of household expenditure on housing, energy, water, and other fuels from 11.5% of total income in 2007 to 14.4% in 2012 (Center for the Study of Democracy, 2014), and 14.3% in 2016 (National Statistical Institute, 2017).[32] Official data estimates that only one-third of the Bulgarian population is able to afford adequate heating in their homes. Since electricity prices remain state-regulated, there is little volatility in the price developments. However, although in principle all consumers are free to choose their supplier, no actual switching is observed, as through the regulated prices for household consumers, there is no benefit in switching and the retail electricity market remains highly concentrated with eight out of total 24 power retailers taking 92% of the market in 2012 (European Commission, 2014b).

### iii. Intra- and Intergenerational Justice and Responsibility

As outlined in the section on availability, the expansion of renewables is associated with an improved grid infrastructure, as well as an the improved access to a decentralised energy source (solar). In terms of intragenerational equity, these effects enhanced the access of Bulgaria's population to "minimal energy services which enable them to enjoy a basic minimum of wellbeing" (Sovacool and Dworkin, 2015, p.440). However, the increased costs of electricity affect poorer consumers disproportionately more, and the government failed to adequately drive the installation of small-scale renewable installations to replace polluting wood and oil generators. Crucially, it

[32] Bulgaria has one of the highest rate of home-owners in the EU with few outstanding mortgages, meaning for the majority of Bulgarians (over 80%), housing costs are zero, while another 15% of the population lives in reduced fee tenancy agreements (European Commission, 2018). The over 14% expenditure share for housing, water and energy should be considered in this light.

thereby failed to improve the equity of the current energy system as grey markets for poor-quality wood used in heating continue to drive prices down, and undermine regulations to preserve Bulgaria's forest stock and increase the country's environmental footprint (Mantcheva *et al.*, 2012).

Most importantly, the failure to meet fundamental energy justice principles in due process and good governance directly led to the dismantling of Bulgaria's renewable energy transition. While the absence of a supportive regulatory framework for renewables, such as the lack of preferential prices, is not an insurmountable obstacle, the associated financial burden and sense of corruption has undermined public support. Although important progress in terms of environmental sustainability was made through the advance of renewables between 2007 and 2013, financial pressures, and the lack of public backing and external incentives – since the renewable targets are already met – undermine the further advance of sustainability improvements and thereby intergenerational equity. As such, the government is failing to adequately fulfil its responsibility to protect the environment, mitigate climate change and safeguard the rights of access to environmental and energy services. As the government failed to provide a stable investment environment that acknowledged environmental, financial and social factors of the promotion of renewables, hopes rest with the growing competitiveness of renewable technologies. As the former minister of energy in the 2013 interim government, Julian Popov, said: "From now on, the only thing that we need in Bulgaria is a level playing field, through the removal of subsidies for conventional energy".[33]

## 5. Discussion and Conclusions

Through the application of the energy justice framework, we were able to determine how Bulgaria's expansion of renewables in light of its 2020 targets led to an improved energy dependence and grid infrastructure that ensured a more stable, safe and clean distribution of electricity. At the same time, the analysis highlighted the fundamental shortcomings in due process and good governance

[33] BG-GOV-01

that enabled a corrupted and mismanaged regulatory framework. These issues resulted in a disproportionate burdening of current consumers and undermined the sustainability of Bulgaria's renewable energy transition, and thereby intergenerational equity. Indeed, the findings of the intragenerational justice aspects of Bulgaria's renewable energy transition beg for a more in-depth assessment of the effects of further vulnerable social groups as identified by Bouzarovski *et. al.* (2017).

Beyond the adverse political and regulatory context visible in the Bulgarian case, renewable energy transitions are seen to serve as important facilitators of improving energy justice in terms of availability and sustainability of energy systems. They represent a central tool for governments seeking to address contemporary environmental and climate issues, and provide greater intergenerational equity. However, while renewable energy transitions can generally improve distributive justice in terms of pollution and access to clean energy, they can potentially aggravate the financial burden of energy to consumers. For renewable energy transitions to therefore advance energy justice as a whole requires a long-term government strategy to enable a responsive policy framework that effectively and efficiently drives the expansion of renewable capacity and thereby protects society from both environmental and financial burdens.

As such, by omission Bulgaria's renewable energy transition affirmed the general assumptions of influential factors shaping renewable energy transitions. The case of Bulgaria's renewables expansion showed how the lack of an effective and dynamic policy design undermines the sustainability of renewable energy transitions. This has been particularly expressed in Bulgaria's weak macroeconomic context, in which large portions of the population struggle with energy poverty, and in times of economic crisis and austerity experience a falling purchasing power. The absence of a bottom-up commitment to sustainability transitions by the government resulted in a regulatory environment driven by external targets without a long-term strategy, and was prone to abuse. Bulgaria's mismanaged policy design had significant financial implications for companies and consumers that further undermined public support in a growing perception of government

corruption. The opacity in energy contracts with conventional power plants eased the political decision to focus the blame for rising electricity prices almost exclusively on renewables that followed an EU-induced greater public transparency.[34]

As the result of an abused top-down policy approach, officially achieving the 2020 renewable targets in 2013 resulted in the lack of a political incentive to expand renewables further and led to a cessation of support for commercial renewable projects. The subsequent ending of a supportive renewables policy after the reaching of the 2020 targets has halted the process of improving the sustainability of Bulgaria's energy system and led to the conclusion that the "so-called energy *transition* in Bulgaria never happened".[35] In effect, due to the regulatory overshoot, the "renewable energy market over-burnt in the early years of its development [..., and] the greediness of some to make fast profit without seeing the whole picture stopped the renewable energy transition after 2012".[36]

In conclusion, Bulgaria's renewable energy transition followed a boom and bust cycle that was marked by a rapid expansion of renewable energy capacity until 2012, and subsequent policy adjustments that halted the development of new projects. Driven by a generous preferential pricing scheme that served the financial interests of some, the fast uptake of renewable capacity was aided by general government incompetence in the design of the regulatory framework. The rapidly accumulating cost of the expansion of renewable electricity and associated grid updates added to a growing financial burden in light of falling energy export levels during the economic crisis. Lacking a domestic commitment for sustainability transitions, the expansion of renewables ended as the external incentive in form of the 2020 targets was reached, and financial pressures mounted.

Conceptually, we expanded the energy justice framework to a case of a less-wealthy European state, and showcased how it can benefit analyses of similar contexts. While its application

[34] BG-CSD-01; BG-WWF-01
[35] BG-NEW-01
[36] BG-ACAD-01

was in part aggravated by the opacity of information, the analytical experience thereby mirrored the challenges of Bulgaria's renewable energy transition. At the same time, the energy justice framework also depicted the potentials in terms of reframing the current policy approach. As seen in this article, energy justice has the ability to highlight societal and economic injustices, as well as identify their origin or potential causes in existing regulatory frameworks and policy-making processes. We therefore exemplified the distinct value of energy justice as an analytical tool and stress its value in informing also future policy decisions, both at a national and EU level. In fact, future target frameworks that include energy justice can potentially prevent similar adverse societal and economic impacts of climate action, as seen in Bulgaria, providing a more sustainable, long-term policy pathway.

Although the analysis was solely focused on the case of Bulgaria, valuable lessons for similar political, economic and societal contexts can be drawn. Through the analysis, we identified the general potential of renewables to improve distributive justice in light of the justice principles of availability and sustainability. At the same time, the analysis highlighted the fundamental need for good governance and due process to provide an effective, efficient and responsive policy framework that serves the interest of society. Otherwise, a mismanaged renewable energy transition can lead to a worsening of the affordability principle by overburdening consumers and resulting in growing energy poverty. As seen in the analysis, such financial pressures undermine the overall sustainability of the transition and thereby endanger intergenerational equity.

Our analysis affirmed the general assumptions on influential factors for renewable energy transitions. It depicted the societal, economic and political implications of a renewable energy transition that lacked a long-term strategy and support, and an effective and dynamic policy design in a macro-economic context of rising energy poverty and decreasing purchasing power during the economic crisis and austerity. Rather than create a system of good governance and due process, Bulgaria's pre-existing dynamics of state capture drove the country's rapid renewable energy growth, and ultimately ended it.

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